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ENERGY RESOURCES CONSERVATION BOARD
Calgary Alberta

Informational Letter
IL 82-8

TO: ALL OIL, GAS, OIL SANDS, PIPELINE,
COAL AND HYDRO AND ELECTRIC OPERATORS

REVISED STATUTES OF ALBERTA, 1980

The proclamation of the Revised Statutes of Alberta has resulted in some format changes including section renumbering in the statutes administered by the Board. All operators should pay particular attention to the Revised Statutes of Alberta, 1980, when making applications to the ERCB. The citations of the statutes are as follows:

the Energy Resources Conservation Act, R.S.A. 1980, c. E-11

the Coal Conservation Act, R.S.A. 1980, c. C-14

the Gas Resources Preservation Act, R.S.A. 1980, c. G-3

the Hydro and Electric Energy Act, R.S.A. 1980, c. H-13

the Oil and Gas Conservation Act, R.S.A. 1980, c. O-5

the Pipeline Act, R.S.A. 1980, c. P-8

the Turner Valley Unit Operations Act, R.S.A. 1980, c. T-12

DATED at Calgary, Alberta on 2 February 1982.

V. Millard
Chairman

CANADIANA
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1 Alberta

2 ENERGY RESOURCES CONSERVATION BOARD
640 Fifth Avenue SW
Calgary, Alberta T2P 3G4

4 IL 82-9

3 **Informational Letter**

To: All Oil, Gas and Oil Sands Operators

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WELL-LICENCE APPLICATIONS - REVISED PROCESSING PROCEDURE

The processing of well-licence applications has become increasingly complex over the last few years. This is due to increasing concern regarding the location of well sites and access roads; the effect of sour gas production; drilling near urban centres or in potential coal development areas; and changes in well spacing.

In order to ensure that well licences are issued properly and that licence data are accurate, the Energy Resources Conservation Board will increase the normal time taken to process and issue a licence from one to two days. Applications received on any day will be processed the following day and the corresponding licence issued the day after the processing is complete. The day the application is received will be determined by the date the well-licence application fee is recorded and receipted. This change will become effective on 1 March 1982.

Board staff will continue to handle minor deficiencies in applications by telephone, but seriously deficient applications will be dealt with by letter. Applicants are requested to take special care to eliminate deficiencies and to request special accelerated approvals only when absolutely necessary, so that the Board may maintain the two-day service.

ISSUED at Calgary, Alberta, on 16 February 1982.

VE Bohme

V. E. Bohme
Board Member

CANADIANA
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MAR 10 1982

ENERGY RESOURCES CONSERVATION BOARD

640 Fifth Avenue SW
Calgary, Alberta T2P 3G4

IL 82-10

Informational Letter

To: All Oil and Gas Operators

25 February 1982

ANNUAL REVIEW OF CRUDE OIL RESERVES

For the 1981 year-end crude oil reserves review, the Oil Department staff reviewed the established reserve values for those crude oil pools where additional drilling had taken place or production data showed that a revision was necessary. As a result, the Board plans to amend its estimate of reserves for the pools as shown on Attachment I and to implement these revisions in the 1981 year-end reserves report. The reserve adjustments will be reflected for allowable purposes effective 1 May 1982.

If an operator disagrees with the initial established reserves as proposed in Attachment I, a letter of objection must be submitted on or before 31 March 1982 marked for the attention of A. R. Olive, Staff Specialist, Oil Department. Where an objection is received, the Board will not make the reserve change proposed by its staff, but rather will arrange a schedule for filing of an incremental reserves submission in accordance with Informational Letter IL-OG 76-23.

Listed in Attachment II are the oil pools which became non-confidential, resumed production, were redesignated, or were changed as a result of operator and Oil Department reservoir studies completed during 1981.

Listed in Attachment III are schemes which received enhanced recovery recognition during 1981 pursuant to applications for enhanced recovery schemes.

Listed in Attachment IV are enhanced recovery reserves established on the basis of applications for enhanced recovery schemes approved in 1981. These reserves are classified as "pre-booked" since they will not be assigned until the schemes are fully operational and have qualified for enhanced recovery status.

Inquiries concerning this letter may be directed to Mr. Alyn Olive, Oil Department, telephone 261-8555.

J. A. Bray, P.Eng.
Manager, Oil Department

Attachments

ATTACHMENT I

PROPOSED RESERVE CHANGE

Pool Light and Medium Crude Oil	Current Initial Vol. in Pl. 10^3 m^3	Current Initial Est. Res. 10^3 m^3	Proposed Initial Vol. in Pl. 10^3 m^3	Proposed Initial Est. Res. 10^3 m^3	Remarks**
Acheson Blairmore A*	879.0	106.0	879.0	123.0	Increase Ri - Np approaching RiN
Acheson Blairmore H*	152.0	15.2	152.0	10.6	Pool Suspended - Set RiN = Np
Acheson East Blairmore H	6 570.0	460.0	7 650.0	536.0	Increase N - New wells added
Aden Bow Island B*	221.0	4.4	221.0	1.1	Pool Suspended - Set RiN = Np
Aerial Viking A	275.0	27.5	275.0	5.5	Decrease Ri - Performance
Aerial Mannville (Primary)	440.0	52.8	470.0	56.4	Increased N - New well added
Aerial Mannville B	167.0	16.7	167.0	3.3	Decrease Ri - Performance
Aerial Mannville C	618.0	61.8	618.0	6.2	Decrease Ri - Performance
Amber Keg River A	365.0	29.2	365.0	43.8	Increase Ri - Performance
Armisie Blairmore*	1 250.0	188.0	2 170.0	326.0	Increase N - New wells added
Bashaw Basal Mannville J	146.0	14.6	146.0	1.2	Pool Suspended - Set RiN = Np
Beaton Wabamun A	102.0	10.2	102.0	1.0	Pool Suspended - Set RiN = Np
Bellshill Lake Blairmore B	1 320.0	13.2	1 320.0	1.1	Pool Suspended - Set RiN = Np
Bellshill Lake Blairmore C	470.0	47.0	470.0	0.4	Pool Suspended - Set RiN = Np
Bellshill Lake Blairmore D	573.0	57.3	573.0	1.3	Pool Suspended - Set RiN = Np
Bellshill Lake Blairmore E	166.0	16.6	166.0	0.1	Pool Suspended - Set RiN = Np
Bigoray Ellerslie A	266.0	26.6	266.0	5.3	Decrease Ri - Performance
Bigoray Ostracod (Primary)	250.0	15.0	300.0	30.0	Increase N & Ri - Np approaching RiN

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* Pools Subject to Good Production Practice

** Abbreviations

Ri - Recovery Factor
Np - Cumulative Oil Production
RiN - Recoverable Reserves
N - Initial Volume-in-Place

ATTACHMENT I (CONT'D)

Pool Light and Medium Crude Oil	Current Initial Vol. in Pl. 10^3 m^3	Current Initial Est. Res. 10^3 m^3	Proposed Initial Vol. in Pl. 10^3 m^3	Proposed Initial Est. Res. 10^3 m^3	Remarks
Bigoray Ostracod B*	321.0	2.9	321.0	4.4	Correction to Np - Suspended Pool
Bigoray Nisku J	123.0	12.3	123.0	0.4	Pool Abandoned - Set RiN = Np
Boundary Lake South Triassic F	50.0	5.0	50.0	0.2	Pool Suspended - Set RiN = Np
Bruce Lower Mannville I	372.0	18.6	372.0	3.7	Decrease Ri - Performance
Campbell-Namao Blairmore D*	176.0	21.1	176.0	26.4	Increase Ri - Np approaching RiN
Caroline Second White Specks A	164.0	16.4	164.0	3.3	Decrease Ri - Performance
Crossfield Cardium A (Waterflood)*	24 900.0	2 750.0	24 900.0	2 990.0	Increase Ri - Np approaching RiN
Crossfield Cardium B*	135.0	16.2	150.0	18.0	Increase N - Np approaching RiN
Crossfield Viking A*	108.0	16.2	167.0	25.0	Increase N - Np approaching RiN
Crossfield East Elkton A*	1 060.0	159.0	1 060.0	180.0	Increase Ri - Np approaching RiN
Cyn-Pem Cardium A (Primary)	126.0	5.6	327.0	9.8	Increase N - Decrease Ri - New wells added
Cyn-Pem Cardium D	-	-	1 470.0	176.0	New Pool 1981 - Pool development
Davey Pekisko A	2 850.0	171.0	3 110.0	187.0	Increase N - New well added
Duhamel D-2A	1 950.0	920.0	2 000.0	1 020.0	Increase N & Ri - Np approaching RiN
Edson Cardium G	49.2	4.9	120.0	12.0	Increase N - Np approaching RiN
Edson Cardium I	180.0	18.0	222.0	17.8	Increase N - Decrease Ri - New well added
Edson Cardium J	250.0	25.0	500.0	50.0	Increase N - Np approaching RiN
Edson Viking C	224.0	22.4	224.0	2.9	Pool suspended - Set RiN = Np

ATTACHMENT I (CONT'D)

Pool Light and Medium Crude Oil	Current Initial Vol. in Pl. 10^3 m^3	Current Initial Est. Res. 10^3 m^3	Proposed Initial Vol in Pl. 10^3 m^3	Proposed Initial Est. Res. 10^3 m^3	Remarks
Fairydell - Bon Accord Basal Mannville C*	636.0	63.6	1 340.0	107.0	Re-evaluation - Increase N - Decrease Ri
Fenn-Big Valley D-3E*	329.0	42.7	329.0	55.9	Increase Ri - Np approaching RiN
Fenn West D-2A	2 540.0	1 020.0	2 540.0	1 270.0	Increase Ri - Np approaching RiN
Ferrier Cardium G (Primary)	2 390.0	156.0	6 400.0	512.0	Increase N & Ri - New wells added
Ferrier Cardium G (Waterflood)	13 000.0	3 250.0	14 200.0	3 550.0	Re-evaluation - Increase N
Garrington Viking A	1 360.0	136.0	5 480.0	548.0	Increase N - New wells added
Garrington Mannville B*	8 630.0	604.0	9 720.0	680.0	Increase N - New wells added
Ghost Pine Lower Mannville A & H*	362.0	18.1	362.0	29.0	Increase Ri - Np approaching RiN
Gilby Belly River C	485.0	48.5	485.0	4.9	Decrease Ri - Performance
Gilby Cardium A*	143.0	14.3	170.0	17.0	Increase N - Np approaching RiN
Gilby Viking A (Waterflood)*	6 120.0	2 750.0	6 120.0	2 450.0	Decrease Ri - Performance
Hussar Glauconitic SS	173.0	17.3	173.0	1.7	Decrease Ri - Performance
Hussar Ostracod P	125.0	12.5	125.0	11.7	Pool Suspended - Set RiN = Np
Jayar Dunvegan A	2 430.0	243.0	3 450.0	345.0	Increase N - New wells added
Judy Creek Viking A*	4 160.0	333.0	4 560.0	684.0	Increase N & Ri - New wells added
Kakwa A Cardium A	899.0	135.0	1 350.0	203.0	Increase N - New wells added
Kakwa Main Cardium A	1 000.0	50.0	1 020.0	51.0	Re-evaluation - New wells added
Lanaway Mannville*	1 030.0	103.0	3 950.0	395.0	Increase N - New wells added
Larne Keg River C	718.0	43.1	718.0	50.3	Increase Ri - Np approaching RiN
Larne Keg River H	413.0	12.4	413.0	11.4	Pool Suspended - Set RiN = Np

ATTACHMENT I (CONT'D)

PROPOSED RESERVE CHANGE

	Current		Proposed		
Pool Light and Medium Crude Oil	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Remarks
Larne Keg River I	478.0	24.0	478.0	19.6	Pool suspended - Set RiN = Np
Larne Keg River N	238.0	16.7	238.0	14.5	Pool Suspended - Set RiN = Np
Larne Keg River Q	159.0	39.7	159.0	15.9	Decrease Ri - Performance
Leduc - Woodbend Blairmore A*	1 310.0	262.0	1 450.0	290.0	Increase N - Np approaching RiN
Leduc - Woodbend D-2E*	192.0	113.0	192.0	121.0	Increase Ri - Np approaching RiN
Malmo Blairmore A	1 160.0	175.0	1 270.0	191.0	Increase N - Np approaching RiN
Manyberries Sunburst A	4 930.0	493.0	3 760.0	376.0	Re-evaluation - New wells added
Manyberries Sunburst C*	774.0	85.2	774.0	116.0	Increase Ri - Np approaching RiN
Manyberries Sunburst Q	1 950.0	293.0	2 640.0	396.0	Increase N - New wells added
Medicine River Basal Quartz I*	262.0	26.2	262.0	34.0	Increase Ri - Np approaching RiN
Medicine River Basal Quartz J*	556.0	16.7	556.0	27.8	Increase Ri - Np approaching RiN
Medicine River Basal Quartz K*	106.0	12.7	132.0	19.8	Increase N & Ri - Np approaching RiN
Mikwan Upper Mannville F	1 040.0	52.0	1 040.0	10.4	Decrease Ri - Performance
Minnehik - Buck Lake D-2A	277.0	8.3	277.0	1.1	Pool Suspended - Set RiN = Np
Mitsue Gilwood A (Primary)	14 100.0	281.0	7 000.0	1 400.0	Re-evaluation - Decrease N; Increase Ri
New Norway D-2	1 910.0	1 140.0	2 150.0	1 400.0	Increase N & Ri - Performance
Olds Cardium C	16.5	1.7	70.0	7.0	Increase N - Performance
Peavey Blairmore	1 450.0	145.0	1 580.0	158.0	Re-evaluation - Increase N
Pembina Keystone Belly River K*	137.0	20.7	183.0	27.5	Increase N - Np approaching RiN
Pembina Belly River KK*	880.0	35.2	880.0	70.4	Increase Ri - Np approaching RiN

ATTACHMENT I (CONT'D)

Pool Light and Medium Crude Oil	Current Initial Vol. in Pl. 10^3 m^3	Current Initial Est. Res. 10^3 m^3	Proposed Initial Vol. in Pl. 10^3 m^3	Proposed Initial Est. Res. 10^3 m^3	Remarks
Pembina Keystone Belly River TT*	289.0	28.9	289.0	2.9	Decrease Ri - Performance
Pouce Coupe South Boundary A (Primary)	532.0	53.2	631.0	63.1	Re-evaluation - Increase N
Provost Viking CAK & Mannville E (Proj. No. 9)*	1 700.0	71.4	1 700.0	35.7	Decrease Ri - Performance
Rainbow Keg River W	340.0	136.0	340.0	51.0	Decrease Ri - Performance
Rainbow Keg River N (Gas Flood)	933.0	374.0	1 150.0	518.0	Increase N & Ri - Performance
Rainbow Keg River YY	66.4	23.2	75.0	30.0	Increase N & Ri - Np approaching RiN
Red Earth Granite Wash C	2 380.0	715.0	2 640.0	792.0	Increase N - New well added
Red Earth Granite Wash K	558.0	22.2	558.0	39.1	Increase Ri - Np approaching RiN
Redwater Basal Mannville E	185.0	27.8	213.0	32.0	Increase N - Np approaching RiN
Retlaw Mannville A*	105.0	10.5	160.0	16.0	Increase N - Np approaching RiN
Rosebud Blairmore*	400.0	60.0	420.0	63.0	Increase N - Np approaching RiN
Skaro Cooking Lake*	128.0	23.0	175.0	26.3	Increase N - Decrease Ri - Np approaching RiN
Sousa Keg River A	284.0	99.6	284.0	28.4	Decrease Ri - Performance
Stettler D-2A (Primary)	35.0	10.5	152.0	45.6	Increase N - New wells added
Stettler D-3B	294.0	176.0	300.0	195.0	Increase N & Ri - Np approaching RiN
Swalwell Pekisko A*	1 090.0	54.8	1 620.0	81.0	Increase N - New wells added
Swalwell Pekisko B	167.0	1.7	167.0	0.7	Pool Suspended - Set RiN = Np
Sylvan Lake Elkton E	222.0	22.2	443.0	31.0	Increase N - Decrease Ri - Np approaching RiN
Tehze Muskeg B	336.0	10.5	336.0	20.2	Increase Ri - Np approaching RiN
Tehze Muskeg C	82.3	8.3	82.3	16.5	Increase Ri - Np approaching RiN

ATTACHMENT I (CONT'D)

	Current		Proposed		
Pool Light and Medium Crude Oil	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Remarks
Turin Lower Mannville I	95.2	4.8	95.2	2.5	Pool Suspended - Set RiN = Np
Utikuma Lake Gilwood D	399.0	79.8	531.0	106.0	Increase N - New wells added
Virginia Hills Viking A	1 410.0	213.0	1 410.0	141.0	Decrease Ri - Performance
Virgo Keg River K	167.0	86.8	198.0	103.0	Increase N - Np approaching RiN
Virgo Keg River V	127.0	38.1	127.0	44.5	Increase Ri - Np approaching RiN
Virgo Keg River BB	139.0	55.6	163.0	65.2	Re-evaluation - Increase N
Virgo Keg River HH	175.0	52.4	175.0	61.3	Increase Ri - Performance
Virgo Keg River UU	152.0	15.2	152.0	1.0	Pool Suspended - Set RiN = Np
Virgo Keg River GGG	509.0	76.3	509.0	91.6	Increase Ri - Np approaching RiN
Virgo Keg River SSS	238.0	59.5	238.0	11.9	Decrease Ri - Performance
Virgo Keg River W2W	636.0	191.0	636.0	50.9	Decrease Ri - Performance
Waskahigan Dunvegan A*	644.0	51.5	3690.0	185.0	Increase N - Decrease Ri - New wells added
Wembley Halfway B	5 000.0	750.0	5 730.0	860.0	Increase N - New wells added
Wimborne D-2B	329.0	16.5	329.0	19.7	Increase Ri - Np approaching RiN
Wimborne D-3A*	15 000.0	1 950.0	15 000.0	2 500.0	Increase Ri - Np approaching RiN
Windfall Rundle A*	1 400.0	210.0	1 600.0	320.0	Increase N & Ri - Performance
Windfall D-3B (Primary)	190.0	19.0	266.0	26.6	Increase N - Np approaching RiN
Windfall D-3B (Gas Flood)*	810.0	97.2	810.0	113.0	Increase Ri - Np approaching RiN
Yekau Lake D-3A	884.0	574.0	1 070.0	696.0	Re-evaluation - Increase N

ATTACHMENT I (CONT'D)

Pool Light and Medium Crude Oil	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Remarks
Zama Muskeg EE	95.3	33.4	114.0	39.9	Increase N - Np approaching RiN
Zama Keg River K	127.0	31.8	127.0	38.1	Increase Ri - Np approaching RiN
Zama Keg River AA	191.0	47.7	191.0	57.3	Increase Ri - Np approaching RiN
Zama Keg River LL	127.0	38.1	127.0	44.5	Increase Ri - Np approaching RiN
Zama Keg River XXX	477.0	95.3	477.0	38.0	Decrease Ri - Performance
Zama Keg RIver ZZZ	238.0	28.6	238.0	38.1	Increase Ri - Np approaching RiN
Zama Keg RIver G2G	960.0	316.0	960.0	125.0	Decrease Ri - Performance
Zama Keg River G4G	370.0	148.0	370.0	55.5	Decrease Ri - Performance
Zama Keg River H4H	381.0	153.0	381.0	76.2	Decrease Ri - Performance
Heavy Crude					
Alderson Upper Mannville J	289.0	28.9	289.0	8.7	Decrease Ri - Performance
Alderson Lower Mannville B*	413.0	70.2	413.0	82.7	Increase Ri - Np approaching RiN
Auburndale Wainwright A*	256.0	20.5	872.0	69.8	Increase N - New wells added
Auburndale Wainwright B	995.0	79.8	1 590.0	79.5	Increase N - Decrease Ri - New wells added
Bantry Mannville O	173.0	7.8	173.0	12.1	Increase Ri - Resumed production operations
Baxter Lake Wainwright	953.0	143.0	1 170.0	176.0	Increase N - Np approaching RiN
Baxter Lake Wainwright C	129.0	7.7	161.0	11.3	Increase N & Ri - New wells added
Chauvin South Sparky E (Primary)	1 780.0	125.0	2 080.0	146.0	Increase N - New wells added
Chauvin South Sparky E* (Waterflood)	1 370.0	288.0	1 420.0	355.0	Increase N & Ri - Np approaching RiN
Chauvin South Sparky P	190.0	9.5	342.0	17.1	Increase N - New wells added
Chauvin South Sparky T	22.2	1.1	66.6	3.3	Increase N - Performance

ATTACHMENT I (CONT'D)

	Current		Proposed		
Pool Heavy Crude Oil	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Initial Vol. in Pl. 10^3 m^3	Initial Est. Res. 10^3 m^3	Remarks
Chauvin South Lloydminster G	900.0	45.0	1 050.0	52.5	Increase N - New wells added
David Lloydminster C	1 260.0	126.0	2 140.0	150.0	Increase N - Decrease Ri - New wells added
Hayter Sparky E	134.0	9.4	302.0	30.2	Increase N & Ri - New wells added
Hayter Dina F	231.0	11.6	456.0	13.7	Increase N - Decrease Ri - New wells added
Lathom Upper Mannville A* (Waterflood)	3 810.0	1 600.0	3 810.0	1 720.0	Increase Ri - New wells added
Little Bow Upper Mannville D (Waterflood)	1 500.0	300.0	1 500.0	225.0	Decrease Ri - Performance
Little Bow Upper Mannville M	76.0	7.6	147.0	8.8	Increase N - Decrease Ri - Performance
Lloydminster Sparky KK	487.0	24.4	807.0	40.4	Re-evaluation - Increase N
Morgan Lloydminster A	19 200.0	192.0	21 900.0	219.0	Increase N - New wells added
Princess Pekisko A*	1 710.0	188.0	1 710.0	257.0	Increase Ri - Performance
Provost Upper Mannville A	8 610.0	259.0	10 100.0	303.0	Increase N - New wells added
Provost Upper Mannville O	210.0	10.5	394.0	19.7	Increase N - Performance
Provost Upper Mannville BB	1 180.0	35.4	3 430.0	68.6	Increase N - Decrease Ri - New wells added
Reagan Rundle A*	350.0	70.0	460.0	82.8	Increase N - Decrease Ri - Performance
Retlaw Mannville V	226.0	22.6	699.0	69.9	Increase N - New wells added
Skiff Sawtooth A	400.0	20.0	400.0	48.0	Increase Ri - Np approaching RiN
Suffield Lower Mannville C	46.7	3.7	93.1	4.7	Increase N - Decrease Ri - Performance
Taber North Taber D*	1 090.0	109.0	2 000.0	200.0	Re-evaluation - Increase N
Taber South Mannville B (Primary)	756.0	15.1	756.0	30.2	Increase Ri - Np approaching RiN
Taber South Mannville B* (Waterflood)	6 400.0	1 730.0	6 400.0	1 920.0	Increase Ri - Np approaching RiN
Turin Upper Mannville C	1 550.0	155.0	1 650.0	165.0	Increase N - New wells added

ATTACHMENT I (CONT'D)

Pool Heavy Crude Oil	Current Initial Vol. in Pl. 10^3 m^3	Current Initial Est. Res. 10^3 m^3	Proposed Initial Vol. in Pl. 10^3 m^3	Proposed Initial Est. Res. 10^3 m^3	Remarks
Turin Lower Mannville L*	2 510.0	377.0	2 290.0	299.0	Re-evaluation - Decrease N & Ri - Performance
Wainwright Sparky G	50.0	2.5	99.0	5.0	Increase N - Performance
Wainwright Wainwright C	1 050.0	63.0	1 980.0	119.0	Increase N - New wells added
Wrentham Lower Mannville A	276.0	19.3	306.0	21.4	Increase N - New well added

ATTACHMENT II

NON-CONFIDENTIAL POOLS DECLARED OR REDESIGNATED AFTER 31 DECEMBER 1980 AND OTHER POOLS FOR WHICH RESERVE DATA WERE CHANGED AFTER 31 DECEMBER 1980

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3m^3	Initial Established Crude Oil At 31 Dec. 1981 10^3m^3	Change 10^3m^3	Reason for Change
Acheson Blairmore O	conf	89.8	+65.3	Lost confidential status 1 August 1981
Acheson Blairmore P	conf	18.3	-	Lost confidential status 1 October 1981
Acheson Detrital B	conf	18.8	-	Lost confidential status 1 May 1981
Aerial Mannville D	conf	21.1	-	Lost confidential status 1 September 1981
Amber Keg River G	47.7	50.0	+2.3	Re-evaluation - Increased N Decreased Ri
Ante Creek North Peace River D	conf	0.1	-19.7	Lost confidential status 1 January 1981 - Suspended
Bigoray Cardium B	258.0	719.0	+461.0	Re-evaluation - Enhanced Recovery Recognition
Bigoray Ellerslie D	22.7	57.7	+35.0	Re-evaluation - Increased N (previously Lower Mannville B Pool)
Bigoray Ellerslie G	undef	41.0	+18.4	New Pool 1 May 1981
Bigoray Nisku A	189.0	333.0	+144.0	Re-evaluation - Enhanced Recovery Recognition
Bigoray Nisku B	450.0	900.0	+450.0	Re-evaluation - Enhanced Recovery Recognition
Bigoray Nisku E	455.0	900.0	+445.0	Re-evaluation - Enhanced Recovery Recognition
Bigoray Nisku I	183.0	260.0	+77.0	Re-evaluation - Increased N
Bigoray Nisku K	0.0	351.0	+351.0	New Pool 1 March 1981
Black Muskeg A	8.0	23.0	+15.0	Re-evaluation - Increased N & Ri
Brant Turner Valley A	conf	0.1	-10.2	Lost confidential status 1 April 1981 - Suspended
Brazeau River Cardium B	0.0	3.2	+3.2	New Pool 1 August 1981
Brazeau River Cardium C	0.0	10.0	+10.0	New Pool 1 September 1981
Brazeau River Cardium E	0.0	13.4	+13.4	New Pool 1 December 1981
Brazeau River Nisku A	2 120.0	3 980.0	+1 860.0	Re-evaluation - Enhanced Recovery Recognition

ATTACHMENT II (CONT'D)

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Brazeau River Nisku D	1 200.0	1 080.0	-120.0	Re-evaluation - Decreased N
Brazeau River Nisku E	900.0	1 500.0	+600.0	Re-evaluation - Enhanced Recovery Recognition
Brazeau River Nisku J	conf	257.0	-	Lost confidential status 1 February 1981
Caroline Viking G	15.5	20.3	+4.8	Re-evaluation - Increased N - Decreased Ri
Caroline Viking J	conf	15.7	-	Lost confidential status 1 April 1981
Caroline Elkton F	conf	36.1	-	Lost confidential status 1 March 1981
Carrot Creek Cardium A	44.0	74.5	+30.5	Resumed production operations
Carrot Creek Cardium E	conf	14.9	-	Lost confidential status 1 February 1981
Carrot Creek Cardium F	conf	45.0	-3.0	Lost confidential status 1 June 1981
Carrot Creek Cardium G	undef	50.0	+38.5	New Pool 1 June 1981
Carrot Creek Cardium H	undef	2.5	-	New Pool 1 June 1981
Carrot Creek Lower Mannville M, Jurassic O & P	137.0	420.0	+283.0	Pool re-designation - Coalescence of Lower Mannville I, J, & K Pools & Jurassic I, J, K, L, M & N Pools
Cessford Banff B	28.0	236.0	+208.0	Pool re-designation - Coalescence of Wayne-Rosedale Banff A & Banff B Pools
Cherhill Banff D	416.0	120.0	-296.0	Re-evaluation - Decreased N & Ri
Chick-a-dee Gething D*	0.0	8.8	+8.8	New Pool 1 November 1981
Chigwell Upper Mannville C	26.1	0.2	-25.9	Pool Abandoned - Set RiN = Np
Clover Gething A*	0.0	6.0	+6.0	New Pool 1 November 1981
Coutts Moulton B	0.3	8.9	+8.6	Resumed production operations
Coutts Moulton C	44.0	78.2	+34.2	Re-evaluation - Increased N
Cranberry Gilwood A	0.0	22.8	+22.8	New Pool 1 September 1981

ATTACHMENT II (CONT'D)

	Initial Established Crude Oil			
Pool Light and Medium Crude Oil	At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Crossfield Second White Specks B	conf	25.3	-	Lost confidential status 1 August 1981
Drumheller Mannville A*	6.7	25.5	+18.8	Resumed production operations
Drumheller Mannville F*	4.4	28.2	+23.8	Re-evaluation - Increased N & Ri
Drumheller Mannville BB	0.0	26.7	+26.7	New Pool 1 May 1981
Drumheller Mannville DD	0.0	0.8	+0.8	New Pool 1 June 1981 - Abandoned - Set RiN = Np
Eaglesham D-1A	conf	43.4	+22.3	Lost confidential status 1 March 1981
Edson Cardium E	7.5	2.6	-4.9	Pool Abandoned - Set RiN = Np
Edson Cardium H	30.8	26.4	-4.4	Re-evaluation - Decreased N
Edson Cardium K	23.7	31.6	+7.9	Re-evaluation - Increased N
Edson Cardium L	conf	8.5	-	Lost confidential status 1 February 1981
Edson Cardium M	conf	7.2	-	Lost confidential status 1 February 1981
Edson Cardium N	conf	7.6	-	Lost confidential status 1 August 1981
Edson Cardium O	0.0	3.9	+3.9	New Pool 1 July 1981
Edson Bluesky A	43.0	107.0	+64.0	Re-evaluation - Increased N
Edson Bluesky B	conf	25.9	-8.7	Lost confidential status 1 August 1981
Entice Pekisko A	0.0	26.0	+26.0	New Pool 1 September 1981
Erskine Blairmore G	conf	19.3	-	Lost confidential status 1 June 1981
Erskine D-2B	0.0	5.9	+5.9	New Pool 1 April 1981
Esther Viking C	undef	10.1	-	New Pool 1 February 1981
Estuary Basal Quartz A	0.0	20.0	+20.0	New Pool 1 December 1981
Evi Slave Point A	undef	480.0	+336.2	New Pool 1 January 1981
Evi Slave Point B	undef	152.0	+111.2	New Pool 1 January 1981
Evi Granite Wash A	undef	195.0	+64.0	New Pool 1 January 1981
Fenn West Banff A*	2.4	1.9	0.5	Pool Abandoned - Set RiN = Np

ATTACHMENT II (CONT'D)

	Initial Established Crude Oil			
Pool Light and Medium Crude Oil	At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Fenn West D-2B	conf	38.5	-	Lost confidential status 1 April 1981
Ferrier Belly River D	0.0	3.5	+3.5	New Pool 1 July 1981
Ferrier Cardium B, N, & Viking A*	334.0	334.0	-	Re-evaluation - Coalescence of Cardium S, T & V Pools and Cardium B, N & Viking A Pool
Ferrier Cardium U	undef	18.2	-	New Pool 1 February 1981
Gleichen Upper Mannville A	conf	4.7	-	Lost confidential status 1 August 1981
Garrington Cardium E	0.0	20.2	+20.2	New Pool 1 June 1981
Garrington Cardium A & B	2 720.0	2 960.0	+250.0	Re-evaluation - Enhanced Recovery Pool
Ghost Pine Upper Mannville RR	0.0	26.4	+26.4	New Pool 1 June 1981
Gilby Basal Mannville S*	20.6	34.5	+13.9	Re-evaluation - Increased N
Gilby Basal Mannville U	conf	11.7	-	Lost confidential status 1 January 1981
Gilby Rundle N	conf	6.7	-	Lost confidential status 1 January 1981
Gilby Rundle O	conf	31.1	-	Lost confidential status 1 January 1981
Halkirk Lower Mannville C	46.5	85.6	+39.1	Re-evaluation - Increased N
Halkirk Lower Mannville D	conf	24.9	-	Lost confidential status 1 June 1981
Hillsdown D-2A	undef	26.3	+9.3	New Pool 1 December 1981
Hillsdown D-2B*	undef	46.2	+3.2	New Pool 1 December 1981
Highvale Cardium A	0.0	17.1	+17.1	New Pool 1 April 1981
Highvale Lower Mannville A	540.0	553.0	+13.0	Re-evaluation - Coalescence of Lower Mannville A & Lower Mannville C Pools
Highvale Lower Mannville D	undef	10.2	-	New Pool 1 October 1981
Highvale Banff A	265.0	420.0	+155.0	Re-evaluation - Increased N
Highvale Banff E	0.0	2.7	+2.7	New Pool 1 February 1981 - Abandoned - Set RiN = Np

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	 Change 10^3 m^3	Reason for Change
Homeglen - Rimbey Ellerslie A	0.0	15.6	+15.6	New Pool 1 April 1981
Hussar Glauconitic J	undef	15.5	+7.2	New Pool 1 January 1981 (previously a gas pool)
Hussar Glauconitic TT	6.9	23.6	+16.7	Re-evaluation - Increased N
Hussar Glauconitic YY	0.0	11.0	+11.0	New Pool 1 June 1981
Hussar Glauconitic EEE	0.0	20.1	+20.1	New Pool 1 September 1981
Hussar Basal Mannville OO	9.4	22.1	+12.7	Re-evaluation - Increased N & Ri
Hussar Basal Mannville QQ	conf	11.3	-	Lost confidential status 1 January 1981
Hussar Basal Quartz A	0.0	65.1	+65.1	New Pool 1 July 1981
Hussar Pekisko B	0.0	14.3	+14.3	New Pool 1 October 1981
Joffre D-2	9 650.0	9 690.0	+40.0	Re-evaluation - Enhanced Recovery Pool
Kakwa Main Cardium C	0.0	1.7	+1.7	New Pool 1 July 1981
Kakwa C Cardium B	0.0	3.1	+3.1	New Pool 1 May 1981
Kaybob South Gething C*	0.0	9.9	+9.9	New Pool 1 November 1981
Keho Pekisko A	conf	36.3	-	Lost confidential status 1 January 1981
Larne Keg River B*	18.9	23.8	+4.9	Resumed production operations
Leduc-Woodbend Blairmore GG	conf	0.2	-14.3	Lost confidential status 1 July 1981 - Suspended
Leduc-Woodbend D-2A* (Primary)	0.0	15.8	+15.8	Established primary reserves
Leduc-Woodbend D-3E*	2.9	15.6	+12.7	Resumed production operations
Loon Slave Point A*	230.0	231.0	+1.0	Re-evaluation - Increased N
Magee Glauconitic A	conf	11.4	-	Lost confidential status 1 July 1981
Manyberries Sunburst J	9.2	40.1	+30.9	Re-evaluation - Increased N
Manyberries Sunburst U	conf	41.9	-	New Pool 1 February 1981
Markerville Viking A	18.5	26.3	+7.8	Re-evaluation - Increased N
Medicine River Viking C	0.0	12.0	+12.0	New Pool 1 September 1981
Medicine River Ostracod A	404.0	401.0	-3.0	Re-evaluation - Increased N Decreased Ri

	Initial Established Crude Oil			
Pool Light and Medium Crude Oil	At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Medicine River Jurassic L*	0.0	3.8	+3.8	New Pool 1 May 1981
Minnehik-Buck Lake Belly River B	0.0	23.8	+23.8	New Pool 1 July 1981
Minnehik-Buck Lake Cardium E	undef	10.2	-	New Pool 1 January 1981
Minnehik-Buck Lake Cardium J	56.1	288.0	+231.9	Pool Redesignation - Coalescence of Cardium B, D, F, G, H & I Pools
Morinville Lower Mannville F*	2.4	3.5	+1.1	Resumed production operations
Nipisi Gilwood E	conf	62.2	-	Lost confidential status 1 August 1981
Nipisi Keg River Sandstone E	85.8	218.0	+132.2	Re-evaluation - Increased N
Nipisi Keg River Sandstone F	conf	80.8	-	Lost confidential status 1 March 1981
Olds Cardium B	conf	8.4	+1.6	Lost confidential status 1 August 1981
Olds Cardium D	0.0	9.7	+9.7	New Pool 1 July 1981
Pakowki Lake Sunburst A	0.0	5.9	+5.9	New Pool 1 August 1981
Parflesh Lower Mannville C	575.0	617.0	+42.0	Re-evaluation - Enhanced Recovery Pool
Pembina Belly River I	2 230.0	2 290.0	+60.0	Re-evaluation - Enhanced Recovery Recognition
Pembina Keystone Belly River U	2 130.0	2 090.0	-40.0	Re-evaluation - Decreased Ri
Pembina Belly River DDD	33.5	45.1	+11.6	Re-evaluation - Increased N
Pembina Belly River JJJ	undef	29.2	-	New Pool 1 January 1981
Pembina Lobstick Glauconitic F	conf	9.7	-	Lost confidential status 1 March 1981
Pembina Lobstick Ostracod E	undef	115.0	+56.8	New Pool 1 February 1981
Pembina Ellerslie D	undef	15.5	-	New Pool 1 February 1981

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Pembina Blueridge B	undef	54.6	+45.6	New Pool 1 January 1981
Pembina Nisku A	1 120.0	1 430.0	+310.0	Re-evaluation - Enhanced Recovery Recognition
Pembina Nisku G	1 200.0	2 100.0	+900.0	Re-evaluation - Enhanced Recovery Recognition
Pembina Nisku K	972.0	1 700.0	+728.0	Re-evaluation - Enhanced Recovery Recongition
Pembina Nisku L	1 680.0	1 930.0	+250.0	Re-evaluation - Enhanced Recovery Recognition
Pembina Nisku Q	conf	637.0	-	Lost confidential status 1 October 1981
Pembina Nisku R	0.0	218.0	+218.0	New Pool 1 July 1981
Pine Creek Second White Specks B	0.0	38.2	+38.2	New Pool 1 March 1981
Pine Creek Cardium H	163.0	200.0	+37.0	New Pool 1 November 1981 - Re-evaluation & Pool Redesignation - Coalescence of Muskeg Cardium A, Pine Creek Cardium E & F Pools
Pine Creek Cardium I	169.3	410.0	+240.7	New Pool 1 November 1981 - Re-evaluation & Pool Redesignation - Coalescence of Muskeg Cardium B, Pine Creek Cardium A, B, C, D and G Pools
Pine Creek Cardium J	0.0	1.0	+1.0	New Pool 1 November 1981 (previously Muskeg Cardium C Pool)
Pine Creek Cardium K	0.0	1.3	+1.3	New Pool 1 November 1981 (previously Muskeg Cardium D Pool)
Pouce Coupe South Boundary B	conf	40.5	+27.7	Lost confidential status 1 October 1981
Provost Viking Y	conf	10.1	-	Lost confidential status 1 June 1981
Provost Viking CAK & Mannville E* (Waterflood)	8 760.0	8 660.0	-100.0	Re-evaluation of Project No. 6
Provost Lower Mannville L	0.0	7.3	+7.3	New Pool 1 June 1981
Rainbow Keg River X	191.0	318.0	+127.0	Re-evaluation - Increased Ri
Rainbow Keg River WWW	conf	151.0	-	Lost confidential status 1 June 1981

ATTACHMENT II (CONT'D)

	Initial Established Crude Oil			
Pool Light and Medium Crude Oil	At 31 Dec. 1980 $10^3\ m^3$	At 31 Dec. 1981 $10^3\ m^3$	Change $10^3\ m^3$	Reason for Change
Red Earth Slave Point A	582.0	693.0	+111.0	Re-evaluation - Coalescence of Slave Point A and Slave Point D Pools
Red Earth Slave Point I	55.9	106.0	+50.1	Re-evaluation - Increased N
Red Earth Slave Point J	undef	14.4	-	New Pool 1 January 1981
Red Earth Slave Point K	0.0	60.5	+60.5	New Pool 1 April 1981
Red Earth Granite Wash Q	conf	13.9	-	Lost confidential status 1 February 1981
Red Earth Granite Wash R	0.0	0.1	+0.1	New Pool 1 April 1981 - Abandoned Set RiN = Np
Red Earth Granite Wash S	0.0	0.3	+0.3	New Pool 1 April 1981 - Abandoned Set RiN = Np
Redwater Upper Viking G	0.0	11.3	+11.3	New Pool 1 October 1981
Redwater Lower Viking H	0.0	39.8	+39.8	New Pool 1 August 1981
Redwater Basal Mannville D	0.3	21.6	+21.3	Resumed production operations
Retlaw Mannville LL	conf	183.0	-	Lost confidential status 1 February 1981
Retlaw Mannville SS	conf	42.9	-	Lost confidential status 1 September 1981
Retlaw Mannville TT	conf	56.5	-	Lost confidential status 1 August 1981
Retlaw Mannville DDD	0.0	5.3	+5.3	New Pool 1 December 1981
Rockyford Lower Mannville A	undef	81.1	+21.9	Re-evaluation - (previously a gas pool)
St. Albert-Big Lake D-1A*	41.3	50.8	+9.5	Resumed production operations
St. Albert-Big Lake D-1B	15.0	43.8	+28.8	Re-evaluation - Increased N
St. Albert-Big Lake D-1C	80.4	139.0	+58.6	Re-evaluation - Increased N (previously Wabamun C Pool)
Shekilie Keg River K	conf	274.0	-	Lost confidential status 1 March 1981
Shekilie Keg River L	conf	84.0	-	Lost confidential status 1 October 1981
Shekilie Keg River M	0.0	888.0	+888.0	New Pool 1 March 1981
Shekilie Keg River N	0.0	82.3	+82.3	New Pool 1 March 1981

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Shekilie Keg River O	0.0	938.0	+938.0	New Pool 1 April 1981
Slave Slave Point A	0.0	140.0	+140.0	New Pool 1 July 1981
Sounding Upper Mannville D*	10.8	1.5	-9.3	Re-evaluation - Decreased Ri
Sousa Keg River G	0.7	37.0	+36.3	Resumed production operations
Sousa Keg River J	0.1	38.4	+38.3	Resumed production operations
Swalwell Pekisko F	109.0	115.0	+6.0	Re-evaluation - Increased N
Swalwell Pekisko H	0.0	41.0	+41.0	New Pool 1 June 1981
Sylvan Lake Viking F	9.5	19.4	+9.9	Re-evaluation - Increased N
Sylvan Lake Viking G	0.0	9.7	+9.7	New Pool 1 July 1981
Turin Upper Mannville H	conf	183.0	+112.3	Lost confidential status 1 April 1981
Turin Lower Mannville V	conf	18.4	-	Lost confidential status 1 April 1981
Turin Lower Mannville W	0.0	24.6	+24.6	New Pool 1 September 1981
Twining Lower Mannville G	conf	23.6	-	Lost confidential status 1 February 1981
Twining Lower Mannville H	0.0	19.4	+19.4	New Pool 1 September 1981
Utikuma Lake Keg River Sandstone H	64.0	89.6	+25.6	Re-evaluation - Increased Ri
Utikuma Lake Keg River Sandstone I	206.0	288.0	+82.0	Re-evaluation - Increased Ri
Utikuma Lake Keg River Sandstone K	82.0	217.0	+135.0	Re-evaluation - Increased N & Ri
Utikuma Lake Keg River Sandstone M	85.8	107.0	+21.2	Re-evaluation - Increased Ri
Utikuma Lake Keg River Sandstone N	870.0	1 020.0	+150.0	Re-evaluation - Increased Ri
Utikuma Lake Keg River Sandstone R	31.3	43.8	+12.5	Re-evaluation - Increased Ri
Utikuma Lake Keg River Sandstone S	conf	86.5	+24.7	Lost confidential status 1 March 1981
Valhalla Doe Creek D	conf	14.2	-	Lost confidential status 1 April 1981

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Virginia Hills Belloy A	350.0	2 360.0	+2 010.0	Re-evaluation - Increased N & Ri
Virgo Muskeg G	66.8	47.7	-19.1	Re-evaluation - Decreased Ri
Virgo Keg River B	195.0	147.0	-48.0	Re-evaluation - Decreased Ri
Virgo Keg River J	76.3	60.4	-15.9	Re-evaluation - Decreased Ri
Virgo Keg River O	69.9	60.4	-9.5	Re-evaluation - Decreased Ri
Virgo Keg River CC	1.3	9.2	+7.9	Resumed production operations
Virgo Keg River NN	82.7	63.6	-19.0	Re-evaluation - Decreased Ri
Virgo Keg River YY	159.0	80.0	-79.0	Re-evaluation - Decreased N
Virgo Keg River CCC	31.0	16.5	-14.5	Re-evaluation - Decreased Ri
Virgo Keg River DDD	89.7	74.4	-15.3	Re-evaluation - Decreased Ri
Virgo Keg River RRR	35.8	83.4	+47.6	Resumed production operations
Virgo Keg River L3L	conf	139.0	-	Lost confidential status 1 March 1981
Wayne-Rosedale Upper Mannville E	conf	35.1	-	Lost confidential status 1 January 1981
Wayne-Rosedale Ostracod D	0.0	7.8	+7.8	New Pool 1 July 1981
Wayne-Rosedale Basal Quartz EE	conf	20.5	-	Lost confidential status 1 January 1981
Wayne-Rosedale Basal Quartz GG	0.0	17.9	+17.9	New Pool 1 June 1981
Wayne-Rosedale Basal Quartz HH	0.0	29.6	+29.6	New Pool 1 August 1981
Westpem Nisku A	1 000.0	1 060.0	+60.0	Re-evaluation - Increased N
Westpem Nisku C	1 600.0	2 040.0	+440.0	Re-evaluation - Enhanced Recovery Recognition
Westpem Nisku D	800.0	880.0	+80.0	Re-evaluation - Increased N
Westerose South Basal Quartz A	0.0	25.6	+25.6	New Pool 1 August 1981
Willesden Green Cardium E	10.6	17.7	+7.1	Re-evaluation - Increased N
Willesden Green Glauconitic A (Primary)	0.0	23.0	+23.0	Established primary reserves

Pool Light and Medium Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Willesden Green Second White Specks C	0.0	10.8	+10.8	New Pool 1 June 1981
Willesden Green Viking C	conf	36.2	-	Lost confidential status 1 July 1981
Windfall Gething D	undef	9.7	-2.3	New Pool 1 November 1981
Zama Muskeg U	3.5	791.0	+787.5	Resumed production operations
Zama Muskeg DD	12.7	25.0	+12.3	Re-evaluation - Increased N & Ri
Zama Keg River J	10.2	33.4	+23.2	Resumed production operations
Zama Keg River S	332.0	122.0	-210.0	Re-evaluation - Decreased Ri
Zama Keg River II	10.8	55.9	+45.1	Resumed production operations
Zama Keg River M4M	11.6	42.0	+30.4	Resumed production operations
Zama Keg River V4V	9.9	19.1	+9.2	Resumed production operations
Zama Keg River D5D	7.7	122.0	+114.3	Resumed production operations

ATTACHMENT II (CONT'D)

	Initial Established Crude Oil			
Pool Heavy Crude Oil	At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Alderson Upper Mannville R	67.9	51.4	-16.5	Re-evaluation - Decreased N
Alderson Upper Mannville S	105.0	89.0	-16.0	Re-evaluation - Decreased N
Alderson Upper Mannville U	conf	10.7	-	Lost confidential status 1 February 1981
Alderson Upper Mannville X	conf	247.0	+239.7	Lost confidential status 1 February 1981 - Coalescence of Upper Mannville W and X Pools
Alderson Upper Mannville Y	conf	59.9	-	Lost confidential status 1 September 1981
Alderson Upper Mannville Z	0.0	16.5	+16.5	New Pool 1 April 1981
Alderson Upper Mannville AA	0.0	14.7	+14.7	New Pool 1 May 1981
Alderson Upper Mannville FF	0.0	3.2	+3.2	New Pool 1 December 1981
Alderson Lower Mannville M	conf	0.1	-4.9	Lost confidential status 1 January 1981 - Suspended
Alderson Lower Mannville O	conf	29.9	-	Lost confidential status 1 September 1981
Alderson Lower Mannville P	0.0	8.2	+8.2	New Pool 1 June 1981
Alderson Lower Mannville Q	0.0	22.8	+22.8	New Pool 1 September 1981
Alexander Basal Quartz E	0.0	6.3	+6.3	New Pool 1 December 1981 - Pool redesignation (previously Wabamun C)
Amisk Blairmore A	12.4	15.5	+3.1	Resumed production operations
Amisk Blairmore B	7.2	25.9	+18.7	Resumed production operations
Atlee-Buffalo Upper Mannville F	304.0	190.0	-114.0	Re-evaluation - Decreased Ri
Atlee-Buffalo Upper Mannville G	conf	272.0	+249.4	Lost confidential status 1 May 1981
Bantry Mannville F*	67.5	76.0	+8.5	Re-evaluation - Increased Ri - Decreased N
Bantry Mannville R	conf	0.1	-7.6	Lost confidential status 1 February 1981 - Suspended

Pool Heavy Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Bantry Mannville S*	0.0	5.0	+5.0	New Pool 1 March 1981
Bantry Mannville V	0.0	8.2	+8.2	New Pool 1 December 1981
Bindloss Lower Mannville A	6.7	5.8	-0.9	Re-evaluation - Decreased Ri
Cessford Basal Quartz C	0.0	35.8	+35.8	New Pool 1 July 1981
Chauvin Sparky A	conf	13.9	+7.5	Lost confidential status 1 November 1981
Chauvin South Sparky H*	533.0	560.0	+27.0	Re-evaluation - Enhanced recovery pool
Chauvin South Sparky S	conf	4.1	-	Lost confidential status 1 August 1981
Chauvin South Sparky U	0.0	0.7	+0.7	New Pool 1 September 1981
Chin Coulee Basal Mannville A*	771.0	823.0	+52.0	Re-evaluation - Enhanced recovery pool
Compeer Lower Mannville B	conf	15.8	-	Lost confidential status 1 August 1981 - Suspended
Countess Upper Mannville D*	5 050.0	5 100.0	+50.0	Re-evaluation - Enhanced Recovery pool
Countess Upper Mannville J*	17.2	37.8	+20.6	Re-evaluation - Coalescence of Lower Mannville B and Upper Mannville J Pools
Countess Upper Mannville Y	0.0	14.4	+14.4	New Pool 1 September 1981
Countess Lower Mannville H	0.0	9.8	+9.8	New Pool 1 August 1981
Countess Lower Mannville I	0.0	3.1	+3.1	New Pool 1 August 1981
Derwent McLaren A	conf	9.0	-	Lost confidential status 1 September 1981
Edgerton Lloydminster C	conf	2.7	-	Lost confidential status 1 May 1981
Edgerton Lloydminster D	conf	2.8	-	Lost confidential status 1 August 1981
Edgerton Lloydminster E	0.0	2.6	+2.6	New Pool 1 April 1981
Grand Forks Lower Mannville E*	607.0	646.0	+39.0	Re-evaluation - Enhanced recovery pool

	Initial Established Crude Oil			
Pool Heavy Crude Oil	At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Grand Forks Lower Mannville F*	129.0	139.0	+10.0	Re-evaluation - Increased N
Grand Forks Lower Mannville G*	229.0	268.0	+39.0	Re-evaluation - Increased N
Grand Forks Lower Mannville H	40.5	60.0	+19.5	Re-evaluation - Increased Ri
Grand Forks Lower Mannville K*	1 220.0	1 230.0	+10.0	Re-evaluation - Increased N
Grand Forks Lower Mannville T	conf	8.7	-	Lost confidential status 1 October 1981
Grand Forks Lower Mannville U	0.0	43.1	+43.1	New Pool 1 June 1981
Grand Forks Sawtooth C	conf	6.9	-	Lost confidential status 1 June 1981
Hayter Upper Mannville A	0.0	1.8	+1.8	New Pool 1 June 1981
Hayter Colony A	conf	0.1	-5.5	Lost confidential status 1 July 1981 - Suspended
Hayter Sparky G	conf	3.2	-	Lost confidential status 1 January 1981
Hayter Dina D	conf	10.7	-	Lost confidential status 1 January 1981
Hayter Dina E	conf	0.1	-1.9	Lost confidential status 1 July 1981 - Suspended
Keho Banff A	0.0	2.3	+2.3	New Pool 1 June 1981
Lathom Upper Mannville H	conf	18.8	-	Lost confidential status 1 August 1981
Lindbergh Colony I	conf	8.9	-	Lost confidential status 1 February 1981
Lindbergh Sparky D	conf	10.1	-	Lost confidential status 1 February 1981
Lindbergh Sparky E	conf	9.1	-	Lost confidential status 1 February 1981
Lindbergh Sparky F	3.6	0.1	-3.5	Abandoned - Set RiN = Np
Lindbergh Sparky G	conf	32.2	-	Lost confidential status 1 July 1981

Pool Heavy Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Lindbergh Sparky H	conf	17.2	-	Lost confidential status 1 September 1981
Lindbergh Sparky M	0.0	4.6	+4.6	New Pool 1 April 1981
Lindbergh Cummings A	undef	15.6	-	New Pool 1 January 1981
Lindbergh McMurray C	conf	19.8	-	Lost confidential status 1 January 1981
Lindbergh McMurray D	conf	8.6	-	Lost confidential status 1 January 1981
Lindbergh McMurray E	conf	22.1	-	Lost confidential status 1 August 1981
Lindbergh McMurray G	0.0	0.1	+0.1	New Pool 1 April 1981 - Abandoned - Set RiN = Np
Lindbergh McMurray H	0.0	12.1	+12.1	New Pool 1 June 1981
Lindbergh McMurray I	0.0	38.7	+38.7	New Pool 1 June 1981
Lindbergh McMurray J	0.0	26.8	+26.8	New Pool 1 June 1981
Little Bow Upper Mannville L	120.0	50.0	-70.0	Re-evaluation - Decreased N & Ri
Little Bow Upper Mannville P	11.5	20.0	+8.5	Re-evaluation - Increased N
Lloydminster Sparky FF	20.4	8.2	-12.2	Re-evaluation - Decreased Ri
Lloydminster Sparky VV	conf	12.0	-	Lost confidential status 1 January 1981
Lloydminster Sparky XX	10.8	18.3	+7.5	Re-evaluation - Increased N
Lloydminster Sparky YY	0.0	4.5	+4.5	New Pool 1 April 1981
Lloydminster Sparky ZZ	0.0	6.1	+6.1	New Pool 1 July 1981
Lloydminster Sparky AAA	0.0	11.6	+11.6	New Pool 1 July 1981
Lloydminster Sparky BBB	0.0	6.4	+6.4	New Pool 1 December 1981
Lloydminster General Petroleum I	5.4	15.8	+10.4	Re-evaluation - Increased N
Lloydminster Lloydminster C	20.5	28.8	+8.3	Re-evaluation - Increased N

Pool Heavy Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Norris Glauconitic A	0.0	4.1	+4.1	New Pool 1 September 1981
Paradise Cummings A	0.1	2.0	+1.9	Resumed production operations
Pendant D'Oreille Mannville L	0.0	4.8	+4.8	New Pool 1 October 1981
Princess Pekisko B	16.8	43.7	+26.9	Re-evaluation - Increased N
Provost Upper Mannville X	0.0	1.7	+1.7	New Pool 1 April 1981
Provost Upper Mannville DD	0.0	5.7	+5.7	New Pool 1 July 1981
Provost Lower Mannville H	conf	4.8	-	Lost confidential status 1 March 1981
Provost Lower Mannville J	conf	4.5	-	Lost confidential status 1 September 1981
Rainier Basal Quartz A	conf	1.9	-	Lost confidential status 1 October 1981
Retlaw Mannville UU	0.0	2.2	+2.2	New Pool 1 March 1981
Retlaw Mannville WW	0.0	24.4	+24.4	New Pool 1 April 1981
Retlaw Mannville AAA	0.0	39.0	+39.0	New Pool 1 August 1981
Sibbald Upper Mannville D	conf	2.0	-	Lost confidential status 1 June 1981
Sibbald Bakken B	conf	0.1	-13.7	Lost confidential status 1 June 1981 - Suspended
Suffield Upper Mannville R	conf	5.8	-	Lost confidential status 1 March 1981
Suffield Upper Mannville S	conf	5.7	-	Lost confidential status 1 April 1981
Suffield Upper Mannville T	conf	13.3	-	Lost confidential status 1 June 1981
Suffield Upper Mannville U	conf	13.7	-	Lost confidential status 1 May 1981
Suffield Upper Mannville V	conf	11.5	-	Lost confidential status 1 May 1981
Suffield Upper Mannville W	conf	3.3	-	Lost confidential status 1 April 1981

Pool Heavy Crude Oil	Initial Established Crude Oil At 31 Dec. 1980 10^3 m^3	 At 31 Dec. 1981 10^3 m^3	Change 10^3 m^3	Reason for Change
Suffield Upper Mannville X	conf	3.0	-	Lost confidential status 1 June 1981
Suffield Lower Mannville K	conf	6.4	-	Lost confidential status 1 July 1981
Suffield Lower Mannville L	conf	7.8	-	Lost confidential status 1 February 1981
Taber Mannville D*	2 260.0	2 250.0	-10.0	Re-evaluation - Decreased N
Taber Mannville J	conf	8.1	-	Lost confidential status 1 February 1981
Taber North Glauconitic A	conf	272.0	+47.0	Lost confidential status 1981
Verger Mannville F	0.0	14.9	+14.9	New Pool 1 October 1981
Taber North Glauconitic B	conf	167.0	-60.0	Lost confidential status 1 June 1981
Taber North Glauconitic C	undef	448.0	+184.1	New Pool 1 April 1981
Viking Kinsella Upper Mannville QQ	0.0	7.3	+7.3	New Pool 1 December 1981
Wainwright Sparky H	conf	2.5	-	Lost confidential status 1 July 1981
Wainwright Wainwright & Sparky A*	9 000.0	9 890.0	+890.0	Re-evaluation - Enhanced recovery pool
Wildmere Sparky G	1.5	8.2	+6.7	Re-evaluation - Increased N
Wildmere Sparky H	undef	5.4	+1.7	New Pool 1 May 1981
Wildmere Sparky I	undef	1.2	+0.3	New Pool 1 May 1981
Wildmere Lloydminster A*	1 950.0	2 910.0	+960.0	Re-evaluation - Enhanced recovery recognition
Wrentham Lower Mannville E	undef	23.4	+4.3	New Pool 1 April 1981

ATTACHMENT III

SCHEMES WHICH RECEIVED ENHANCED RECOVERY RECOGNITION IN 1981

Pools Light and Medium Crude Oil	Depletion Mechanism	Scheme Recovery Factor Modifier
Bigoray Cardium B Approval No. 3283	Waterflood	3.500
Bigoray Nisku A Approval No. 2983	Waterflood	1.500
Bigoray Nisku B Approval No. 3077	Solvent Flood	2.000
Bigoray Nisku E Approval No. 2855	Waterflood	1.286
Brazeau River Nisku A Approval No. 3062	Solvent Flood	1.875
Brazeau River Nisku E Approval No. 3174	Solvent Flood	1.444
Joffre D-2 Approval No. 3251	Waterflood	1.200
Pembina Belly River I Approval No. 2951	Waterflood	2.615
Pembina Nisku A Approval No. 3029	Waterflood	1.275
Pembina Nisku G Approval No. 3126	Solvent Flood	1.750
Pembina Nisku K Approval No. 3140	Solvent Flood	1.750
Pembina Nisku L Approval No. 3167	Waterflood	1.150
Red Earth Slave Point A Approval No. 3138	Waterflood	4.000
Westpem Nisku C Approval No. 3159	Waterflood	1.275

ATTACHMENT III (CONT'D)

Pools Heavy Crude Oil	Depletion Mechanism	Scheme Recovery Factor Modifier
Wildmere Lloydminster A Approval No. 2812	Waterflood	2.600

ATTACHMENT IV

PRE-BOOKED RESERVE INCREMENTS FOR SCHEMES APPROVED IN 1981 AND AWAITING ENHANCED RECOVERY RECOGNITION

Pools Light and Medium Crude Oil	Primary (Set) 10^3m^3	Enhanced 10^3m^3	Depletion Mechanism
Bigoray Ellerslie D Approval No. 3401	57.7	173.0	Waterflood
Bigoray Nisku K Approval No. 3415	255.0	385.0	Waterflood
Brazeau River Nisku D Approval No. 3350	1 080.0	1 760.0	Solvent Flood
Carrot Creek Cardium F Approval No. 3322	45.0	113.0	Waterflood
Carrot Creek Cardium G Approval No. 3335	50.0	125.0	Waterflood
Carrot Creek Lower Mannville M Jurassic O & P Approval No. 3394	344.0	645.0	Gas Flood
Red Earth Slave Point A Approval No. 3243	90.0	210.0	Waterflood
Virginia Hills Belloy A Approval No. 3356	1 420.0	3 800.0	Waterflood
Westpem Nisku A Approval No. 3372	1 060.0	1 990.0	Solvent Flood
Westpem Nisku D Approval No. 3306	880.0	1 540.0	Solvent Flood
Heavy Crude			
Cherhill Banff D Approval No. 3238	120.0	280.0	Waterflood
Little Bow Upper Mannville L Approval No. 3362	50.0	150.0	Waterflood
Taber Mannville D Approval No. 3358	10.0	20.0	Waterflood
Wainwright Wainwright Approval No. 3380	5.7	23.7	Waterflood

CANADIANA
MAR 26 1982

1 Alberta

2 ENERGY RESOURCES CONSERVATION BOARD

640 Fifth Avenue SW
Calgary, Alberta T2P 3G4

3 Informational Letter

To: All Oil, Gas, and Oil Sands Operators 15 March 1982

PRESERVATION OF ARCHAEOLOGICAL, PALAEONTOLOGICAL, AND HISTORICAL RESOURCES: POLICY UPDATE

Attached is a policy statement from Alberta Culture which was inadvertently left off 4 IL 82-11. Please attach this to the IL and destroy this covering letter.

NATIONAL [illegible] NATIONALE
CANADA

W. Remmer

W. Remmer, P.Eng
Assistant Manager
Environment Protection Department

CULTURE

Office of
the Minister

403/427-4928

402 Legislature Building
Edmonton, Alberta, Canada
T5K 2B6

June, 1981

POLICY STATEMENT

HISTORICAL RESOURCES CONSERVATION WORK CONDUCTED ON PROJECTS WITH A WINTER CONSTRUCTION SCHEDULE

When historical resources conservation work is requested of proponents for development projects having winter construction schedules, Alberta Culture has, in the past, often encountered difficulty in meeting its mandate as expressed in the Policy Statement: Historical Resources Conservation Work Occasioned by Development Programmes (May 12, 1977).

Historical resources, consisting of archaeological, palaeontological, historic, and some natural sites, are generally found as an integral component of the ground surface and upper soil deposits. Consequently, winter conditions, such as snow cover and frozen ground, severely impede the successful survey and investigation of these resources. In some instances it has been necessary to relax the technical requirements usually demanded of Historical Resource Impact Assessments on mitigative projects rather than delay significant and costly development projects until winter conditions have abated.

Unfortunately, the relaxation of these technical requirements greatly limits the successful assessment and mitigation of historical resource sites that may be impacted by development, thereby reducing the effectiveness of Alberta Culture in meetings its mandate as provided for in the Alberta Historical Resources Act. This is not an acceptable solution, and as a result it will henceforth be necessary for Alberta Culture to require that the following policy be observed:

Policy Responsibilities

In order to ensure that historical resource assessments are conducted in sufficient detail to satisfactorily provide the Minister with all information relevant to the question of the probable impact of a specific development proposal on historical resources, no special concessions will be made relative to difficulties encountered in winter programmes when assessing the results of the investigations necessitated by the project. Consequently, all reports will be evaluated strictly in terms of the content and quality of their results regardless of the season in which the project is initiated, and developers are advised to schedule their investigations for that time of year which will best enable their investigators to obtain the information necessary to provide a complete Historical Resources Impact Assessment.

Alberta
CULTURE

Office of
the Minister

403/427-4928

402 Legislative Building
Edmonton, Alberta, Canada
T5K 2B6

May 12, 1977

POLICY STATEMENT

HISTORICAL RESOURCES CONSERVATION WORK OCCASIONED BY DEVELOPMENT PROGRAMS

One of the greatest strengths of any people is their appreciation of their common past. The ability to identify with a shared history results in the development of a bond amongst individuals and groups which frequently transcends all other affiliations, and gives those acknowledging this bond an identity marking them as unique in the world. For a nation, or a part of a nation, it is a priceless asset.

Until quite recently in Alberta a truly common sense of provincial identity was absent. Historical affiliations generally centred on other parts of the work or on local communities, for the population was basically composed of arrivals only one or two regional generations removed from a distant homeland, or native people with very strong ties. In keeping with this pattern, traditional values and practices were also transplanted or reinforced, resulting in the rich and diverse ethnic communities which characterize this province. These communities, and the affiliations they have created, continue to thrive today as testaments to the importance of a historical sense of belonging.

While the historic ethnic groups continue to flourish within Alberta, there has in recent years been an ever growing awareness that in addition to their ethnic affiliations, individual Albertans are participants in another historical tradition, that of the Province itself. This tradition, which is equally rich in both natural and human elements, has a strength and character of its own which identifies Albertans as having a world image all their own. It reflects contributions not only from the ethnic background of settlers and their descendants, but also from the Native inhabitants and the elements of nature which constitute the framework for the provincial pageant. Thus dinosaur fossils, buffalo jumps, fur trading posts and early homesteads all play a part in Alberta's historical tradition.

Appreciation of their common past is today becoming ever more apparent among Alberta's citizens, and they are asserting increasing pressure to have this historical tradition investigated, documented and presented in public displays and publications. Unfortunately, however, the realities of modern life are such that major elements of this shared identity are in grave danger of being lost before they can be properly integrated into the structure of our historical traditions.

While some facets of real significance to the early history of Alberta still survive, many of the physical vestiges of this history exist only as palaeontological, prehistoric or historic sites. At the same time, because these sites exist on or near the surface of the ground they are very susceptible to damage or destruction through land surface modifications. In an era of rapid and major land development associated with such things as resource extraction, recreation, transportation and urbanization, a substantial number of Alberta's prehistoric and historic sites and structures have been and will continue to be destroyed before their significance can be properly established and documented. The irony of this situation is that although the evolution of Alberta's character as a Province has finally reached the stage where citizens are actively seeking identity with a common past, the evidence testifying to this common past is now being destroyed by development at a rate far in excess of anything seen in previous years.

In recognition of this situation, the Alberta Provincial Government enacted the Alberta Historical Resources Act. Among other things the Act provides the Minister responsible for Culture with the authority to require developers to prepare assessments of the effect of their proposed developments on historical resources and to undertake such studies or modification to the development plan as may be necessary to retain important historical resource values. It is the intention of this Department to make use of this opportunity to maximize the retention of important historical resource sites, specimens and information for the benefit of all Albertans, both those now living and those yet to be born.

POLICY OBJECTIVES

1. To avoid unnecessary impact on all historical resource sites.
2. To preserve the most important historical resource sites wherever technically and economically feasible.
3. To promote the recovery of information and specimens of value from those historical resource sites which cannot be preserved.

In order to meet the above Policy Objectives, the following shall be considered to be the allocation of responsibilities:

POLICY RESPONSIBILITIES

1. The developer shall be responsible for the conduct of sufficiently detailed studies in the planning stage to enable the preparation of an historical resource impact assessment report, and for the production of such a report.
2. The Historical Resources Division of Alberta Culture will be responsible for the technical and professional review of historical resource impact assessments and the preparation of review statements concurring with, rejecting or requesting a modification of such recommendations relative to historical resource sites as cannot be avoided by the development because of technical or economic limitations.
3. The developer is responsible for the conduct of all mitigative measures deemed appropriate at historical resource sites which cannot be avoided by the development because of technical or economic limitations.
4. Where the Historical Resources Division and the developer cannot agree on appropriate mitigative measures (as above), the Minister of Culture will be responsible for the final decision as to appropriate mitigative measures to be undertaken in situations where historical resource sites cannot be avoided by a development because of technical or economic limitations.
5. The responsibilities of the developer will be the same for both government and private agencies.

In order to meet the respective Policy Responsibilities, the following shall be considered to be the normal procedures for implementation:

POLICY IMPLEMENTATION

1. At the planning stage of any major development; and well prior to the commencement of any ground surface disturbance, an inventory of the historical resources to be affected by the development will be prepared by the developer utilizing information obtained from archival sources when available and field reconnaissance when necessary.
2. On the basis of this inventory the developer will prepare an historical resources impact assessment report which details the nature and location of each historical resource site, the postulated effect of the development on each historical resource site, and the proposed mitigative

measures to be undertaken by the proponent to minimize the loss of historical resources relative to each site that cannot be avoided by the development because of technical and/or economic limitations.

3. The historical resources impact assessment report will be reviewed by the Historical Resources Division, Alberta Culture, prior to the commencement of land surface disturbance by the development, which will accept, reject or request modifications to the report and its recommendations as appropriate.
4. The development will be permitted to proceed in accordance with the recommendations of an acceptable historical resource impact assessment report, provided such mitigative measures as are deemed necessary are carried out in advance of any possible modification, damage or destruction of the said historical resources.

ENERGY RESOURCES CONSERVATION BOARD
640 Fifth Avenue SW
Calgary, Alberta / T2P 3G4

IL 82-12

Informational Letter

5 March 1982

CANADIANA
MAR 18 1982

From: Occupational Health and Safety Division
Workers' Health, Safety and Compensation
Province of Alberta
and
Energy Resources Conservation Board

To: All Developers and Operators of Coal
and Oil Sands Mining Projects

MINE SAFETY ACCORD ESTABLISHED

The Division of Occupational Health and Safety of Alberta's Workers' Health, Safety and Compensation (OH&S) and the Energy Resources Conservation Board (ERCB) have agreed upon an accord. The agreement will resolve difficulties which arose from the transfer of mine safety inspection services to the OH&S and from a resulting overlap of responsibilities. The accord defines the responsibilities and roles of each organization and establishes procedures for the co-ordination of services in the approval and operating phases of a coal or oil sands mining project.

Interested parties may obtain a free copy of the "Agreement Between the Division of Occupational Health and Safety and the Energy Resources Conservation Board on Roles and Procedures for Coal and Oil Sands Projects" from ERCB's Maps and Publications desk, main floor, Calgary office.

ENERGY RESOURCES CONSERVATION BOARD	OCCUPATIONAL HEALTH AND SAFETY DIVISION
	H. Buchwald
N. Berkowitz Vice Chairman	H. Buchwald Managing Director

ENERGY RESOURCES CONSERVATION BOARD
640 Fifth Avenue SW
Calgary, Alberta T2P 3G4

IL 82-13

Informational Letter

To: All Oil, Gas, and Oil Sands Operators 7 April 1982

OFF-TARGET PENALTY FACTORS FOR EXPLORATION WELLS

In August 1981 the Energy Resources Conservation Board issued Decision 81-20, which brought about a shift of the standard target area for oil wells to the northeast corner of the quarter section. The objective was to reduce the impact of drilling operations on agricultural lands. The possibility of shifting standard gas well targets to the extreme northeast part of the section was also considered but rejected. Among other things, Decision 81-20 resulted in a reduced common target area for one-section gas wells in relation to quarter-section oil wells. The Board, however, undertook to re-examine alternative means of alleviating the special problem for exploration wells caused by the reduced common target area.

The Board has reviewed this matter in some detail and concludes that any policy allowing automatic waiver of off-target penalty factors for exploration wells would be administratively complex considering the increasing numbers of small pools being discovered. Such a policy would also potentially cause serious and frequent disputes between operators as to what properly constitutes a discovery well for a particular zone. The Board therefore considers the proposal quite impractical and discards it.

The Board points out, however, that there are other means by which the desire for common oil and gas target areas for exploratory wells can be accommodated. For instance, an operator planning an exploratory well may apply, under the Oil and Gas Conservation Regulations, for the establishment of a special drilling spacing unit with a target area of his own specification. Moreover, the Board's routine administrative procedures provide for automatic suspension of off-target penalty factors for all single-well pools. They also provide for removal of off-target penalty factors upon written request for multi-well pools that have common ownership. The Board believes that the combination of these options considerably mitigates the problem of reduced common target areas for oil and gas wells referred to above.

Sometimes, operators are faced with the prospect of locating an exploration well outside the normal target area, in order to satisfy a landowner. In such cases, the Board urges the operator

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to discuss the problem with offset mineral owners with a view to reaching an agreement on the location of the well before starting to drill. In this respect, the Board would expect that valid reasons could be put forward for removing an off-target penalty factor where a reasonable balance has been drawn between concerns of the landowner, off-set mineral owner, and hydrocarbon recovery objectives.

This completes the undertaking by the Board set out in Section 4.4.4, "Impact on Flexibility in Exploration", of Decision 81-20.

Further inquiries concerning this subject may be directed to Mr. John Nichol, Development Department, telephone 261-8283, telex 03-821717.

N. A. Strom
Board Member

MAY 3 1982

ENERGY RESOURCES CONSERVATION BOARD
640 Fifth Avenue SW
Calgary, Alberta T2P 3G4

IL 82-14

Informational Letter

To: All Oil, Gas, and Oil Sands Operators 19 April 1982

A SUMMARY OF POLICIES AND PROCEDURES RESPECTING WELL SPACING PROVISIONS AND MEANS TO VARY THEM

This informational letter contains a summary of the policies and procedures respecting oil- and gas-well spacing currently applicable in Alberta. The letter consolidates and supersedes a number of informational letters that have been issued over the years and also complements the following recent informational letters concerning this subject:*

IL 81-23 - 11 August 1981
IL 81-30 - 11 December 1981
IL 82-4 - 13 January 1982
IL 82-13 - 7 April 1982

The development of pertinent aspects of the current oil- and gas-well spacing policy as it applies in various parts of the province is also reflected in the following Energy Resources Conservation Board decision reports:

74-5	Impact of Petroleum Activities in Irrigation Areas
78-5	Spacing and Target-Area Requirements for Oil and Gas Wells Drilled in the Province of Alberta
80-8	Drilling Spacing Unit Target-Area Requirements for Oil and Gas Wells Drilled in the Grande Prairie Area
81-20	Drilling Spacing Unit Target-Area Requirements for Oil and Gas Wells Drilled in the Province of Alberta
81-21	Drilling Spacing Unit Target-Area Requirements for Oil and Gas Wells Drilled in the Municipal District of Smoky River and the Bonanza Area
81-26	Application by Dome Petroleum for Reduced Spacing and Target-Area Requirements, Lindbergh Area

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*IL-OG 72-11 - 16 June 1972
IL-OG 74-10 - 10 July 1974
IL-OG 74-11 - 12 July 1974
IL-OG 75-14 - 22 September 1975
IL-OG 77-2 - 7 December 1977
IL-OG 77-9 - 4 October 1977

1 EVOLUTION OF WELL SPACING PRACTICES

Board Decisions 78-5 and 81-20 provide an extensive review of oil- and gas-well spacing practices in the province. For convenience, however, a brief review is included here.

1.1 Past Spacing Practices

Initially, standard oil-well spacing was one legal subdivision (16 hectares or 40 acres) with the target area for the well in the centre of the legal subdivision. In 1961, the standard oil-well spacing was converted to one quarter section (64 hectares or 160 acres) with the target area in the southwest legal subdivision. Also, from time to time over the years, a variety of spacing provisions for individual oil developments had been implemented with the well spacing ranging from 4 to 128 hectares (10 to 320 acres) and being influenced by such factors as reservoir geology, crude-oil gravity and viscosity, drilling depth, and anticipated oil allowables. In the meantime, standard gas-well spacing remained as one section (256 hectares or 640 acres) with the gas-well target being one of the interior legal subdivisions of the section.

In 1968, a strategic change was made, with the oil-well targets being shifted to the central 16 hectares (40 acres) in the quarter section while the gas-well target area was expanded to overlap the oil-well target areas such that a common area for oil and gas targets existed in all four quarters of a section. To accommodate the change and at the same time permit reasonable protection for off-setting mineral owners in developed pools, a buffer zone around the perimeters of the previously developed pools was established. In effect, the new spacing provisions were applied to all undeveloped regions throughout the province, while developed pools were assigned spacing target provisions in accordance with the pre-existing rules under which they were drilled.

1.2 SU 800 Spacing

In response to mounting problems caused by gas and oil developments in the irrigated farming areas of southeast Alberta, the Board, after a public hearing, issued Decision 74-5, setting out corner target locations for wells drilled in those areas south of township 31 and east of the 5th meridian. Since the spacing order setting out these provisions is Order No. SU 800, the area is frequently referred to as the SU 800 area. These provisions have been successful to a considerable degree in reducing land-use conflicts between irrigated-farming and petroleum operations.

In 1976, the Board was approached by the Farmers' Advocate and Unifarm to consider the possibility of extending the "SU 800" concept of corner target areas to other parts of the province. The request was considered at a hearing in April 1977 but the Board, in Decision 78-5 issued in April 1978, decided not to extend the SU 800 provisions to the remainder of the province. However, it expanded the central gas target area to improve the well target flexibility and thereby aid in resolving land-use problems.

1.3 Grande Prairie-Type Corner Targets

In response to a request from farmers in the Grande Prairie area in 1980, the Board conducted similar hearings and subsequently adopted special corner target provisions intended to promote the location of well sites very close to the quarter-section boundaries in such a way as to minimize intrusion of roads and well sites within the quarter-section boundaries. This became known as the "Grande Prairie type of spacing", and triggered requests from a wide spectrum of the agricultural industry for a full review of the possibility of extending this form of provision to all remaining undeveloped regions of the province. As a result, the Board held hearings in 1981 and issued Decisions 81-20 and 81-21 extending the provisions for corner targets to many of the remaining agricultural areas of the province as set out in Order No. SU 1088. The exclusions to SU 1088 are: already developed oil and gas pools; the forested (green) areas, and the SU 800 area which was already accommodated.

2 APPLYING FOR CHANGES TO EXISTING SPACING AND TARGET AREAS

If an operator sees a need to locate a well outside the prescribed target area, he should seek the necessary change to the spacing or target area prior to licensing a well. For example, in some circumstances the prescribed spacing or target area may need to be changed to ensure efficient pool development or to minimize land-use conflicts. Also, the change may simply involve a change in target location for a single well, whereas in other cases it may involve wholesale change in target location and spacing size for a large pool development area. In all instances questions of energy-resource recovery, mineral-owner equity, and landowner concerns should be fully addressed in an application. The following is a brief review of several ways in which an application for change in spacing or well-targets may be pursued.

3 OIL AND GAS CONSERVATION REGULATIONS

3.1 Section 4.030
Request for a Spacing Order (SU Order)

Section 4.030 of the Oil and Gas Conservation Regulations provides for the establishment of special drilling spacing units that differ from normal drilling spacing units in size, shape, or target area. Hence, most applications for a change from existing "normal" spacing as prescribed under section 4.020, SU 800, or SU 1088 spacing, or for a change to a subsisting field spacing (SU) order are made under this section.

An applicant is required to provide a set of information, as specified in section 15.160 of the regulations, that will permit other mineral owners and surface landowners in the area to readily examine the potential effects of the proposal on their interests.

3.2 Section 4.030
Pre-1968 Policies for Certain Wells or DSUs

For an off-target well or a DSU with more than one well that qualifies under the following categories, approval of applications made under section 4.030 of the regulations for a special target area may be granted after advertising:

- A well drilled prior to 1968 that resulted in the discovery of a pool.
- A well drilled prior to 1968 for which there was good reason for having drilled off-target, provided that a well of equivalent quality could have been drilled on the prescribed target, and that conservation and correlative rights will not be adversely affected.
- Where a DSU contains two or more wells capable of producing and the operator wishes to produce the off-target well, the off-target penalty may be removed having regard for conservation and correlative rights.

3.3 Section 4.035
Special Spacing for Experimental Schemes

Section 4.035 of the regulations is new and will provide for special DSUs for an experimental scheme. The special DSUs may differ from normal drilling spacing units in size, shape, or target area.

The section will state:

> "(1) Notwithstanding section 4.020, the Board may, after a public hearing or after publication of notice, by order prescribe for an experimental scheme
>
> (a) special drilling spacing units as to size, shape, and target area, or
>
> (b) an area within which wells may be drilled in accordance with an experimental scheme approval, such area not having any specific drilling spacing units as to size, shape, or target area.
>
> (2) An application for an order pursuant to subsection (1) shall conform to the provisions of section 15.160 concerning such applications."

Operators planning an experimental scheme that would involve a relatively standard drilling spacing unit (in size, shape, and target area) should apply under subsection 1(a). A special drilling spacing unit order (SU order) would be issued under this subsection.

An operator would apply under subsection 1(b) for an experimental scheme involving an irregular or skewed well-spacing pattern that could not be accommodated under the regular land survey system concept. A miscellaneous (Misc) order, which could specify such things as drilling spacing unit size and shape, minimum interwell distances, and buffer zones, would be issued under this subsection.

3.4 Section 4.060
Geologic, Topographic, and Other (GTO) Order

Section 4.060 provides for the suspension of target-area requirements where it can be shown that local geologic or topographic or other conditions make it impractical to develop the area by drilling on the prescribed target areas, and provided that the rights of owners of contiguous drilling spacing units are not adversely affected. The section is intended to resolve drilling-location problems in areas of largely common ownership and should be applicable to either entire pools or at least a block of several drilling spacing units. Applications under this section are granted only after a public hearing or publication of notice. A GTO order identifies the areas involved and often specifies minimum interwell distances. Well spacing density in the area is normally not changed. The GTO provision has been applied to particular advantage in foothill areas where terrain, drill hole deviation, and reservoir structure present unique difficulties in drilling wells within prescribed target areas.

3.5. Section 4.070, SU 800, and SU 1088
Calculation of Off-target Penalty Factors

Section 4.070 specifies the calculation procedure for determining the off-target penalty factor if a well is completed outside the target area prescribed in section 4.020 of the regulations.

For wells completed outside the target area as prescribed in Board SU Orders No. 800 and 1088, the penalty factors are calculated in accordance with the methods prescribed in those orders.

Off-target penalties automatically take effect except when suspended under certain conditions described below. Permanent removal of an off-target penalty can be obtained through successful application under section 4.030.

3.6 Section 4.070 Subsection (3)
Suspension of Off-target Penalties

Continuing the practice established in the past few years, the Board will consider requests by letter to suspend the off-target penalty for a gas or oil well when one of the following circumstances applies:

(a) Single-well Pool

The off-target penalty factor will automatically be suspended when the off-target well is the only well in the Board-designated pool.

(b) Multiwell Pools

In a multiwell pool where the ownership is common, the Board may suspend the application of an off-target penalty factor upon request. In such cases, the initiative must be taken by the operator to satisfy the Board that common ownership exists throughout the Board-designated pool and that production via off-target wells, without penalty, appears reasonable having regard for conservation.

(c) Reinstatement of Suspended Off-target Penalty

If an additional well capable of production is completed in a single-well pool as initially classified under paragraph (a) and the ownership in the pool is not common, the off-target well would immediately become subject to its prescribed off-target penalty factor. By the same rule, if an off-target penalty has been suspended in a multiwell pool under (b) and new developments nullify the common ownership, the off-target penalties take effect immediately. However, it should be noted that administrative procedures reflecting the reinstated penalty factor may lag somewhat, as several months could elapse before the Board staff becomes aware of the changed status. While it is primarily an obligation of the owner of the off-target well to abide by the regulations by promptly conforming with the reinstated off-target penalty, the Board also considers it the responsibility of other owners in this kind of situation to ensure that their rights and interests are maintained by being aware of the developments in the pool.

For the purpose of defining common ownership it is also necessary to establish the capable-production status of wells in the pool. The Board considers a "gas well to be capable of production" when a suitable test has demonstrated to the Board's satisfaction that the well is capable of producing gas at a commercial rate on a sustained basis even though the well may be suspended or shut in. The Board considers an "oil well to be capable of production" at the time when the well is placed on production.

(d) Requests for Revision of Off-target Penalty Status

Where a penalty factor has been suspended under rules (a) or (b) above, an interested party may apply to have the penalty reinstated, if it can demonstrate that the common-ownership status in the pool no longer applies.

Similarly, where a penalty factor is now being applied, and an operator can supply evidence that the pool now qualifies under paragraph (a) because wells have been suspended or abandoned, or under paragraph (b) because of the establishment of common ownership, suspension of the off-target penalty factor may be granted.

The numerical value and status of the off-target penalty of non-confidential wells is public information. Inquiries regarding the off-target penalty factor of non-confidential oil wells should be directed to the Oil Department (Proration Section) and for non-confidential gas wells to the Gas Department (Pressure and Deliverability Group).

3.7 Section 5.010 Subsection (2)
Infill Wells

Infill well (IW) orders are made pursuant to section 5.010(2) of the regulations for the purpose of productivity or conservation improvement in enhanced-oil-recovery projects through improved drainage. Enhanced-recovery projects developed on uniform spacing may result in regions of the pool being unswept. Also gas- and water-coning or fingering may cause premature loss of well productivity, thereby reducing efficient drainage. In such cases, oil recovery may be increased by drilling infill wells on an irregular pattern to contact undrained regions and to counteract coning and fingering losses.

Applications for IW orders should comply with the general content requirements of section 15.160 of the regulations. Because the situation is often quite localized and unlikely to affect other owners, drainage of off-setting lands may not be an issue; also, evidence concerning the economics of infill drilling is not ordinarily required. However, the applicant must set out the need for the order, expected recovery and productivity benefits, proposed drilling locations, proximity of infill wells to project boundaries, and suggested minimum interwell distances.

Following Board approval of such an application, an IW order is issued identifying the area involved and any minimum distance provisions. As an allowable control measure, the IW order usually specifies that only one oil-well minimum allowance will be assigned for each developed drilling spacing unit.

4 OIL AND GAS CONSERVATION ACT

4.1 Section 71 Subsection (4)
Misc Orders for Units and Blocks

Section 71 of the Oil and Gas Conservation Act authorizes the Board to vary any provision of the Act or regulations regarding units or blocks. In most cases, the provision is used where a unit has been formed to cover much or all of a pool.

The section is employed in two ways:

(a) To vary spacing regulations to permit infill drilling without regard to well density or orientation in order to improve conservation or increase productivity.

(b) To remove off-target penalties for subsisting wells for as long as the unit or block is in existence.

Applications under this section will receive favourable consideration if the rights of other owners will not be adversely affected, if the unit is also subject to an enhanced-recovery scheme, or if the unit includes the whole of a pool and the extent of that pool is fully delineated.

Application under this section must comply with the general content requirements of section 15.160 of the regulations.

Following approval of such an application, the Board will issue a miscellaneous (Misc) order referring to the unit or block area and sometimes specifying a minimum interwell distance. For oil blocks, an order may also specify a limit of only one minimum allowance for each developed DSU.

5 OTHER MATTERS

5.1 Oil-well Off-target Penalty Factors: GPP Pools, Well Minimum Allowance

Where the Board has assigned good production practice (GPP) status to an oil pool, pursuant to IL 82-15, the goals of conservation and correlative rights must continue to be satisfied. When necessary, the Board may rescind GPP status to achieve those goals. For example, if a well is drilled off-target in a GPP pool, production from the well may be restricted by specifying a maximum-rate limit for the well and then applying the off-target penalty factor.

Where oil wells are subject to an allowable equal to the well minimum allowance, the Board's usual procedure is to not reduce the allowable to less than the minimum allowance through the application of off-target penalty factors. Nonetheless, if such an oil well is located significantly off-target to the extent that correlative rights are adversely affected, the Board may, upon the request of an off-set owner and after considering the views of the off-target well owner, assign a maximum-rate limit less than the minimum allowance.

5.2 Licensing for Oil or Gas DSUs

As a routine practice the Board will license a well under section 2.020 of the regulations, on the basis of the drilling spacing unit specified in the licence to which the applicant has the rights. Thus wells are sometimes licensed on the basis of applicable quarter-section oil DSUs but, when drilled, establish gas production, for which a one-section gas DSU is required. For such a well, production of the gas will not be permitted until the licensee has obtained the appropriate agreement for the gas rights to the entire gas drilling spacing unit.

In some cases where an applicant has applied for a well location in the common oil and gas target area so as to be fully eligible to produce either gas or oil without penalty, a landowner or occupant might object to the proposed location. In these cases the Board would expect the applicant to show that it held the rights to the entire gas

DSU (normally the whole section). In dealing with the landowner's concern, the Board would require the applicant to demonstrate that it had considered all alternative common gas and oil targets in the section and that the location chosen was the most appropriate from all viewpoints.

5.3 Public Notification of Spacing Changes

In order to ensure that operators are aware of applications for a change in spacing, applications under section 71(4) of the Act and sections 4.030, 4.035, 4.060, and 5.010(2) of the regulations are advertised for objection. If objections are received, a hearing is held to consider the contentious issues. However, letters requesting suspension of an off-target penalty factor under section 4.070(3) are processed administratively and are not subject to publication of notice.

5.4 Landowner Concerns

Recently the Board has noted an increasing incidence of conflict between owners of surface and mineral rights in cases where the latter have submitted applications for a reduction in spacing, especially where it involves a significant increase in the number of wells per section. To make it easier to assess the impact of reduced spacing on landowners, section 15.160 of the regulations is being amended to require that the applicant provide the following:

- A list of the addresses of the surface owners or occupants concerned.
- A statement pertaining to present land use; for example: farmland, ranch land, forested land.
- A commentary on the impact that increased well density may have on current and future land use within the area of application.
- An indication as to whether or not the proposed spacing or target-area change has been discussed with the affected individuals and as to their general reaction to the proposed change.

The Board will continue to publish notification in regional and local newspapers for most applications for spacing change. However, if a particular landowner problem is identified, the Board may direct that notice be provided to each landowner. Alternatively an applicant might choose to address a particular landowner concern through a separate application.

Further inquiries concerning this subject may be directed to:

Well Licensing Section, Development Department
Well Test and Deliverability Section, Gas Department
Engineering Section, Oil Department

N. Strom
Board Member